Dear Alice,

I read your response to Ecstasy drain spinal fluid? in the archive, and you advised to drink water and not overheat while on ecstasy... Isn't there a danger in drinking liquid while "high" because of fluid retention that is caused by ecstasy?

Well, that's all...

Answer

Dear Well, that's all…,

You're correct, there's some concern in overhydrating with certain drugs — and ecstasy is one of them. Drinking too much water may cause hyponatremia (abnormally low sodium, also known as salt, in the blood) by diluting the sodium levels in the body. Essentially, this is when the body has too much water and not enough sodium. Some ecstasy users will drink too much water without sufficiently replacing depleted sodium and this puts them at risk for not only hyponatremia, but also cerebral edema (swelling of cells in the brain). These conditions can put people at risk of serious complications such as seizures or even a coma (more on these in a bit).

A number of factors contribute to the risk of hyponatremia when taking ecstasy. The details occur sequentially:

1. Taking ecstasy causes the release of neurotransmitters, specifically serotonin, dopamine, and norepinephrine, into the central nervous system. One effect of this is an increase in the levels of prolactin, vasopressin, cortisol, and adrenocorticotropic hormone.

2. Elevated levels of cortisol and oxytocin (stimulated by the release of prolactin) in the body may increase energy levels, elevate mood, allow engagement in intense physical activity, and increases metabolic rate. This is a likely reason why ecstasy is a popular drug at raves, concerts, and other parties as people have the energy to dance the night away.

3. This elevated level of energy, in turn, can lead to increased physical activity, which may cause higher levels of sweating. This means loss of both fluids and sodium through sweat. Take this with the possibility of experiencing vomiting or diarrhea (side effects of ecstasy), and the likelihood of dehydration and sodium depletion is high.
4. At the same time, ecstasy may also cause water retention. Vasopressin, which is released in greater quantities when taking ecstasy, is an anti-diuretic hormone that regulates blood pressure and water retention. When sodium levels get too high, the body thinks it’s dehydrated (likely increasing levels of thirst) and therefore releases more vasopressin to reduce the amount of water that is lost through urination. On the flip side, when sodium levels become too low, vasopressin release is decreased and the kidneys absorb less water — causing the need to urinate more! When taking ecstasy, regardless of sodium levels, the body will be releasing more vasopressin, which causes more water retention than usual. This may result in dilution of sodium in the body.

5. Lastly, people on ecstasy often drink lots of water due to increased feelings of thirst from sweating. This may lead to overhydration.

To put all the pieces together, sodium levels can be decreased in three ways: sodium can be lost through sweat, water retention dilutes sodium levels, and overhydration further dilutes sodium. While it’s unlikely that any one of these factors would cause hyponatremia alone; in combination, they put a person on ecstasy at high risk of hyponatremia and subsequent cerebral edema.

Initial symptoms of hyponatremia can include headache, nausea, vomiting, and altered mental status. If you recognize these signs in yourself or someone else, your best bet is to seek medical attention immediately before further complications occur. Complications of hyponatremia may include memory loss, impaired concentration, seizures, coma, and even death. Cerebral edema can also lead to seizure or coma. Research indicates hyponatremia may be more common and more serious among women, and more specifically, among pre-menopausal women. It’s thought that the higher levels of estrogen found in pre-menopausal women increases the impact of vasopressin, thereby increasing fluid retention and subsequent swelling of the brain cells. This can more quickly lead to issues with cerebral edema, seizures, and coma. So, while this information is valuable for all, it’s especially vital for women in this category to be on the lookout for signs and symptoms of hyponatremia. If this does occur, treatment usually involves intravenous fluids to help stabilize sodium levels and reduce swelling of the brain cells.

If you or someone you know chooses to use ecstasy, you can reduce the likelihood of hyponatremia by drinking water slowly (versus guzzling a lot at once) and by consuming no more than one to two cups per hour. It’s preferable to drink a sports drink to help replenish electrolytes (sodium is an electrolyte!) and even noshing on a salty snack. Also, taking breaks from the dance floor may help reduce the fluid and salt lost through sweating. Like most drugs, if you choose to use, it’s often a good idea to take them with someone you trust who can look out for your physical and mental well-being. You can learn more about ecstasy and other drugs that are sometimes used at parties through Dance Safe [3], a peer-led, harm reduction organization. You might also check out other related Q&As in the Go Ask Alice! Alcohol and Other Drugs [4] archive.

Well… that’s all…!

Alice!
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